

SEMICONDUCTOR DEVICE WITH FULLY
SELF-ALIGNED LOCAL INTERCONNECTS, AND
METHOD FOR FABRICATING THE DEVICE

ABSTRACT OF THE DISCLOSURE

5 A semiconductor device and a method of making it
involve the semiconductor device (10, 71, 101, 121, 151,
201) having a substrate (11, 73, 153) with spaced source
and drain regions (13-14, 76-78, 154). A gate section (21,
81-82, 123, 203) projects upwardly from between an adjacent
pair of the regions, into an insulating layer (31, 83, 103,
122, 157). In order to create local interconnects to the
source and drain regions through the insulating layer, a
10 patterned etch is carried out using an etch region (36, 87,
126), which extends over one of the gate sections from a
location above one of the regions to a location above
another of the regions. Etching in this etch region
produces recesses (41-42, 91-93, 107-108, 138-139, 158) on
15 opposite sides of and immediately adjacent the gate
section. A conductive layer (51, 96, 111, 161, 171) is
deposited to fill the recesses, and then is planarized back
to the upper ends of the gate sections. The conductive
material remaining in each recess is self-aligned to be
20 immediately adjacent at least one gate section, and serves
as a local interconnect for a respective source or drain
region.